

Equation of State Measurements of
Deuterium up to 200 GPa

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We present the first density, shock speed and particle speed measurements of shocked liquid deuterium at pressures ranging from 25 to 210 GPa. The shock waves were produced with a laser driver. The data show a significant increase in compressibility near 100 GPa as compared to existing widely-used equation of state models. The data strongly suggest a thermal molecular dissociation transition of the diatomic fluid into a monatomic phase.

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